

1. (Currently Amended) A computer program product embodied on a computer-readable medium and comprising code that, when executed, causes a computer to model and analyze a plurality of computing workloads, the code ~~An apparatus for modeling and analyzing a plurality of computing workloads, comprising:~~

a data collection module configured to gather performance data associated with the operation of a computer system;

a modeling module configured to execute a plurality of models ~~at least one model~~ that ~~uses~~ use the gathered performance data wherein the modeling module is further configured such that output data from a first model serves as input data for a second model in a hierarchy of models;

a data analysis module configured to present analysis data compiled from the modeling module; and

a framework configured to manage the data collection module, the modeling module, and the data analysis module in response to a predefined data and model flow.

2. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, wherein the framework is configured to selectively operate a predefined data collection module or a user-defined data collection module in response to the predefined data and model flow.

3. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, wherein the framework is configured to selectively operate a predefined model or a user-defined model in response to the predefined data and model flow.

4. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, wherein the framework is configured to selectively operate a predefined data analysis module or a user-defined data analysis module in response to the predefined data and model flow.

5. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, wherein the framework is integrated within a predefined user interface.

6. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, wherein the framework is integrated within a third-party application.

7. (Canceled).

8. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, wherein the modeling module is further configured to execute a plurality of models in parallel.

9. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, wherein the framework is configured to implement the predefined data and model flow at least in part by defining a workload software object from a persistent data structure, the workload software object comprising parameters for the data collection module, modeling module, and data analysis module.

10. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, further comprising an editor configured to allow a user to define and store the predefined data and model flow.

11. (Currently Amended) The ~~apparatus~~ computer program product of Claim 1, wherein the at least one model is selected from the group of models consisting of a workload prediction model, a performance analysis model, an optimization model, and a user-defined model.

12. (Currently Amended) A computer program product for a software editor for defining, revising, and storing a data and model flow for modeling and analyzing a plurality of computing workloads, the computer program product embodied on a computer-readable medium and comprising computer-executable code that, when executed comprises~~An editor for defining, revising, and storing a data and model flow for modeling and analyzing a plurality of computing workloads, comprising:~~

an identification module for gathering an identifier for a data and model flow;

a measurement module for designating a data collection module configured to gather performance data associated with the operation of a computer system;

a modeling module for designating a plurality of models ~~at least one model~~ that use ~~uses~~ the gathered performance data wherein the modeling module is further configured such that output data from a first model serves as input data for a second model in a hierarchy of models;

a metric map for defining model variables required to analyze analysis data compiled from the at least one model;

a plot module for designating a data analysis module configured to present analysis data compiled from the at least one model.

13. (Currently Amended) The ~~editor~~ computer program product of Claim 12, further comprising a storage module configured to store and retrieve the data and model flow from a persistent data structure.

14. (Currently Amended) The ~~editor~~ computer program product of Claim 13, wherein the persistent data structure comprises an eXtensible Markup Language (XML) file.

15. (Currently Amended) The ~~editor~~ computer program product of Claim 13, wherein the persistent data structure comprises a database.

16. (Currently Amended) A system for modeling and analyzing computing operations for a computer system, comprising:

a computer system for which computer workloads are to be monitored and analyzed;

a computer program product embodied on a computer-readable medium and comprising code that, when executed, causes a computer to implement a
data collection module in communication with the computer system and configured to gather performance data associated with the operation of the computer system;

a computer program product embodied on a computer-readable medium and comprising code that, when executed, causes a computer to implement a
run-time manager configured to periodically poll the data collection module and in response to the data collection module providing the gathered performance data, execute ~~one~~ two or more models in a workload

module associated with the gathered performance data wherein output data from a first model serves as input data for a second model in a hierarchy of models; and

a computer program product embodied on a computer-readable medium and comprising code that, when executed, causes a computer to implement a
data analysis module configured to present analysis data compiled from the workload module in response to an event.

17. (Original) The system of Claim 16, further comprising a user interface configured to execute one or more workload modules within the run-time manager in response to a user request, each workload modules defining a data and model flow specifically designed for the computer system, the data and model flow defined within a persistent data structure.

18. (Original) The system of Claim 16, wherein the event comprises analysis data that fails to satisfy a threshold value.

19. (Original) The system of Claim 16, wherein the event comprises a user request for analysis data, the data analysis module presenting the analysis data to a user by way of a user-definable plotting module.

20. (Original) The system of Claim 16, further comprising an event handler that executes a predefined action in response to the event.

21. (Currently Amended) A computer program product embodied on a computer-readable medium and comprising code that, when executed, causes a computer to implement An

an application programming interface (API) for real-time modeling and analyzing of computing workloads, comprising:

a measurement software class configured to gather performance data associated

with the operation of a computer system;

a workload software class that defines a data and model flow associated with the

computer system, the workload software class comprising ~~one~~ two or more

model software classes that utilize the gathered performance data to model

attributes of the computer system wherein output data from a first model

serves as input data for a second model in a hierarchy of models; and

a run-time manager software class configured to periodically poll for

measurement objects instantiated from the measurement software class

and execute one or more model objects instantiated from the one or more

model software classes in response to the data and model flow defined by

one or more workload objects.

22. (Currently Amended) The ~~API~~ computer program product of Claim 21, further comprising a real-time interface module configured to start and stop execution of one or more workload objects.

23. (Currently Amended) The ~~API~~ computer program product of Claim 21, wherein the interface is further configured to present analysis data compiled by a plot object instantiated from a plot class, the analysis data associated with a specific workload object identified by a user.

24. (Currently Amended) A computer program product embodied on a computer-readable medium and comprising code ~~A method~~ for modeling and analyzing a plurality of computing workloads, comprising that, when executed, causes a computer to perform the following ~~A method for modeling and analyzing a plurality of computing workloads, comprising:~~

- gathering performance data associated with the operation of a computer system;
- executing a plurality of models ~~at least one model~~ that ~~uses~~ use the gathered performance data wherein the modeling module is further configured such that output data from a first model serves as input data for a second model in a hierarchy of models;
- presenting analysis data compiled from the at least one model; and
- providing a framework configured to manage the gathering of performance data, the execution of the at least one model, and the presentation of the analysis data in response to a predefined data and model flow.

25. (Currently Amended) The ~~method~~ computer program product of Claim 24, wherein the framework is executed from within a third-party application.

26. (Currently Amended) ~~An article of manufacture comprising a program storage medium readable by a processor and embodying one or more instructions executable by a processor to perform a method~~ A computer program product embodied on a computer-readable medium and comprising code for modeling and analyzing a plurality of computing workloads that, when executed, causes a computer to perform the following ~~for modeling and analyzing a plurality of computing workloads, the method comprising:~~

gathering performance data associated with the operation of a computer system;
executing a plurality of models ~~at least one model~~ that ~~uses~~ use the gathered
performance data wherein the modeling module is further configured such
that output data from a first model serves as input data for a second model
in a hierarchy of models;
presenting analysis data compiled from the at least one model; and
providing a framework configured to manage the gathering of performance data,
the execution of the at least one model, and the presentation of the analysis
data in response to a predefined data and model flow.

27. (Canceled).

28. (Currently Amended) A computer program product embodied on a computer-
readable medium and comprising code ~~A method~~ for modeling and analyzing a plurality of
computing workloads, said method comprising that, when executed, causes a computer to
perform the following ~~A method for modeling and analyzing a plurality of computing workloads,~~
~~said method comprising:~~

~~specifying~~ a data and model flow for monitoring a computer system;
invoke ~~invoking~~ a modeling and analysis utility, wherein the data and model flow
defines performance data that is collected and models that are executed
periodically using the performance data to compile analysis data
representative of results from one or more of the models wherein output

data from a first model serves as input data for a second model in a hierarchy of models; and

receive ~~receiving~~ a real-time graphical representation of the analysis data from the modeling and analysis utility, in response to an event.

29. (Currently Amended) The ~~method~~ computer program product of Claim 28, wherein the event comprises analysis data that fails to satisfy a threshold value.

30. (Currently Amended) The ~~method~~ computer program product of Claim 28, wherein the event comprises a user request, the modeling and analysis utility presenting the graphical representation of the analysis data to a user by way of a user-defined plotting module.